

Transportation Analysis Report for

# **Berryessa Creek Modifications**

Milpitas, CA

# **Draft**

May 2012

Traffic Analysis Report for

# Berryessa Creek Modifications

Milpitas, CA

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## Section 1

### Executive Summary

## EXECUTIVE SUMMARY

The Berryessa Creek flows west out of the Diablo Range and into the residential neighborhoods of San Jose and Milpitas, finally turning north through industrial portions of Milpitas before joining Lower Penitencia Creek. The project studied in this report would modify the creek's channelization to reduce potential damage from flooding. To do so, the project would temporarily close or partially close several roadways in Milpitas. Of these roadways, two are expected to cause significant traffic diversion to nearby streets: Calaveras Boulevard and Montague Expressway.

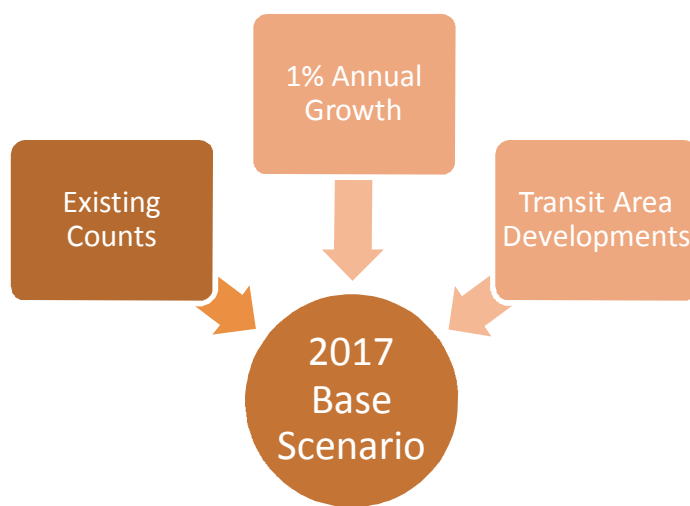


Figure 1: Schematic of Future Volume Generation

The first step was to develop an existing scenario, with current traffic counts, timings, and geometry. These data were obtained from various sources, including the VTA Traffic databases, tube counts conducted in 2008, and through correspondence with City of Milpitas, Caltrans, and City of San Jose officials. Since project construction will not occur until 2017, estimates of future volumes were needed. Starting from counts conducted in 2008 and 2010, an annual growth rate of 1% (not compounded) was applied and approved project trips from residential developments near the future Milpitas BART station were added. On average, traffic volumes in 2017 were about 12% higher than

those in the Existing 2012 scenario. Only one planned improvement is expected to be in place by 2017: an extension of Milpitas Boulevard that would connect Montague Expressway to Capitol Ave, providing access to the BART station.

## FINDINGS

Construction improvements on Berryessa Creek could temporarily impact up to seven street crossings, and two railroad crossings.

### Significant Impacts

Once construction of the Berryessa Creek modifications takes place, it is expected that traffic will divert to parallel streets. Namely, a partial closure in Calaveras Boulevard would increase traffic on Montague Expressway and vice versa. A “plus project” scenario that combines the future base volumes with the expected diversions was used to analyze the intersections’ level of service once the partial closures are ongoing. It is assumed that the closures would not happen simultaneously. Jurisdiction-specific

significance criteria were used to determine whether an impact required mitigation. Table 1 **Error! eference source not found.** summarizes the locations with temporary significant impacts.

**Table 1: Summary of Significantly Impacted Intersections**

Calaveras Boulevard Partial Closure	Montague Expressway Partial Closure
Montague Expressway & Capitol Avenue	Montague Expressway & Trade Zone Boulevard*
Montague Expressway & Main Street/Old Oakland	
Montague Expressway & Trade Zone Boulevard*	

\* Although these intersections were failing without the project, the impact is considered significant because delay was observed to increase by more than four seconds

The following temporary significant impacts and mitigation measures were identified:

**Impact 1:** Partial closure of Calaveras Boulevard would cause temporary significant impacts at three locations, at the intersections of Montague Expressway with Capitol Avenue, Montague Expressway with Main Street and Montague Expressway with Trade Zone Boulevard.

**Mitigation 1a.** Monitor traffic operations, potentially temporarily retime traffic signal and/or provide manual control. Implementation of Mitigation 1a would reduce the temporary impact to **a less than significant level**.

**Mitigation 1b.** Implement Mitigation 1a at the intersection of Montague and Main. The impact at this location would be a temporary **significant and unavoidable** impact.

**Mitigation 1c.** Implement Mitigation 1a at the intersection of Montague and Trade Zone. The impact at this location would be a temporary **significant and unavoidable** impact.

**Impact 2:** Partial closure of Montague Expressway would cause temporary significant impacts at the intersection of Montague and Trade Zone Boulevard.

**Mitigation 2a.** Implement Mitigation 1a at the intersection of Montague and Trade Zone Boulevard. No other mitigation is feasible. The impact at this location would be a temporary **significant and unavoidable** impact.

Note that significant and unavoidable impacts at the intersections of Montague with Main and Montague with Trade Zone were also identified as significant and unavoidable impacts in the Transit Area Specific Plan (TASP) EIR (1) due to growth in traffic volumes from the approved projects that are part of the TASP.

### Less Than Significant Impacts

The following temporary impacts were determined to be less than significant and no additional mitigation was identified:

**Impact 3:** Complete closure of Old Piedmont Road.

**Impact 4:** Complete closure of Los Coches Street.

**Impact 7:** Partial street closure impacts on pedestrians.



## Section 2

### Introduction

## INTRODUCTION

This report presents the traffic and transportation analysis for the construction of proposed modifications to Berryessa Creek in Milpitas and San Jose, California.

## STUDY AREA

The Berryessa Creek watershed is located in Santa Clara County, California, south of San Francisco Bay (Figure 1). Berryessa Creek is a tributary to the Coyote Creek system, which flows into the southernmost end of San Francisco Bay. Berryessa Creek flows west out of the Diablo Range and into the residential neighborhoods of San Jose and Milpitas, finally turning north through industrial portions of Milpitas before joining Lower Penitencia Creek.

The project area extends approximately 4.5 miles along Berryessa Creek, beginning downstream where Berryessa Creek meets Calaveras Boulevard (Highway 237) and ending 600 feet upstream of Old Piedmont Road at the base of the Diablo Range. The creek flows west out of the Diablo Range and runs through an area comprised of undisturbed grazing land shaded by mature sycamore and eucalyptus trees. At Old Piedmont Road, the creek enters a predominantly residential section of San Jose. From Piedmont Road to Morrill Avenue, the creek flows through a riparian greenbelt that includes a park. From Morrill Avenue, the creek continues to flow west through earth and concrete-lined channels maintained by the Santa Clara Valley Water District. The creek then abruptly turns north after flowing under I-680 and continues on through earth channels until reaching Calaveras Boulevard.

The study watershed is divided into two distinct study sub-watersheds by the Interstate 680 freeway (I-680) located approximately midway in along the study reach. Interstate 680, in the vicinity of the study area, is raised with concrete sound walls lining each side of the freeway. This creates a barrier which prevents overland flooding from continuing to the lower portions of the watershed. The only opening in this barrier is the existing Berryessa Creek culvert under the freeway.

## PROJECT DESCRIPTION

The proposed Berryessa Creek modification project would construct improvements to reduce potential damage from flooding. Several alternatives are proposed for modifications. The elements of the modifications would include channel modifications such as shoring and transition structures, headwall extensions, channel widening, bank stabilization, and levee/floodwall construction. The improvements may also include complete replacement of bridges and culverts.

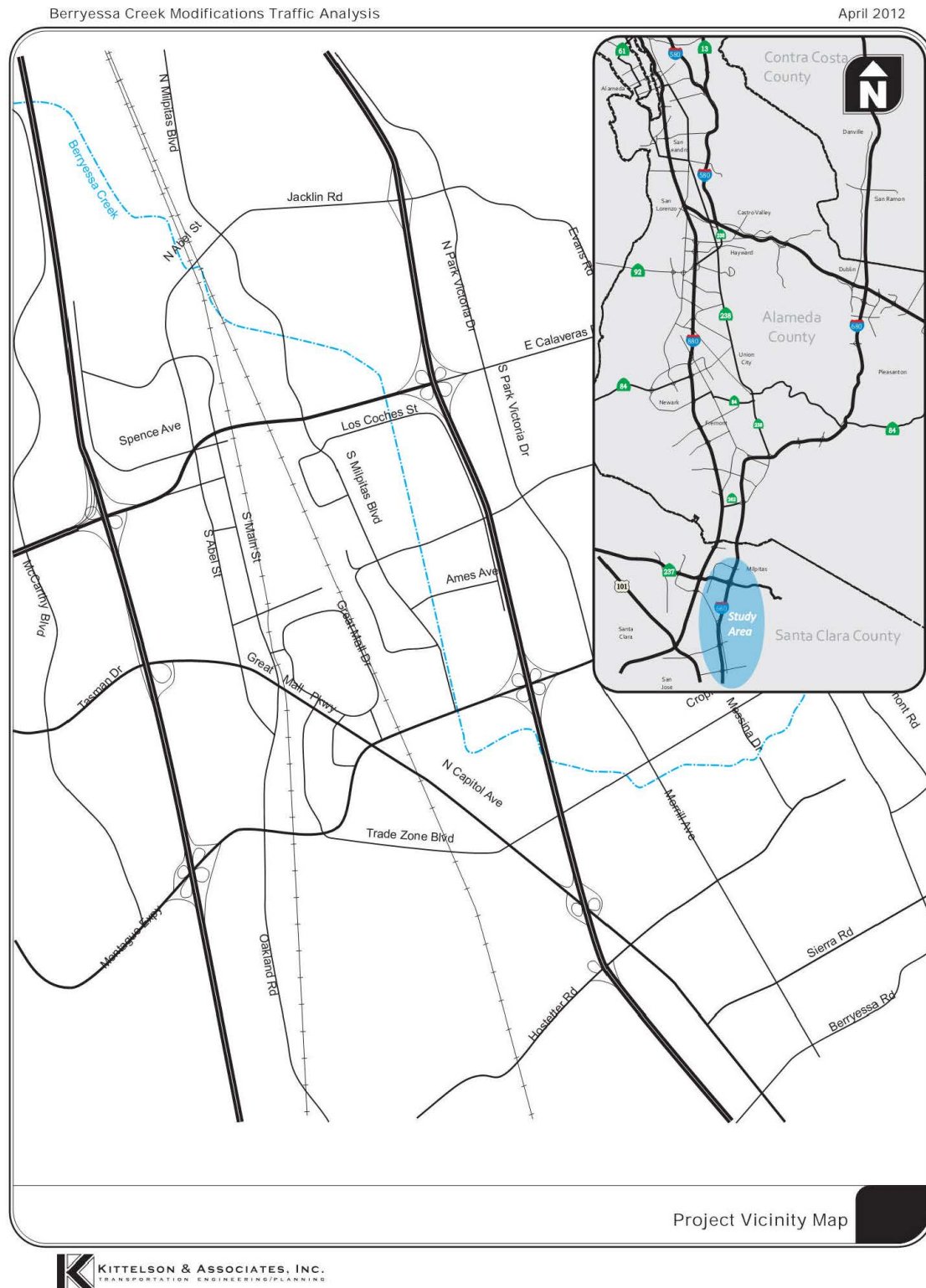


Figure 2: Project Vicinity Map

During construction of the Berryessa Creek project, there will be temporary closures of sidewalks and traffic lanes in the project area at the points where streets cross the creek corridor on bridges or culverts. The transportation analysis evaluates three basic construction alternatives as transmitted by TetraTech on March 6, 2012.

1. Authorized Plan
2. A Alternatives
3. B Alternatives

The A and B Alternatives would result in modifications to project features between I-680 at the upstream end and Calaveras Boulevard on the downstream end. Table 2 outlines the alternative plans for carrying out the Berryessa Creek modifications.

**Table 2: Construction Alternative Bridge/Culvert Impacts**

No.	Bridge/Culvert	Authorized Plan	A Alternatives	B Alternatives
1	Calaveras Boulevard	Modify	Modify (PC30)	Replace (PC120)
2	Los Coches Street	No Action	Modify (PC30)	Replace (C60, PC30)
3	Yosemite Drive	Modify	Modify (PC10)	Modify (PC10)
4	Ames Avenue	Modify	Modify (PC10)	Modify (PC10)
	UP Railroad Culvert	Modify	Modify	Replace (C2)
	UP Railroad Trestle	Replace (C2)	Replace (C2)	Replace (C2)
5	Montague Expressway	Modify	Modify (PC10)	Replace (PC120)
6	Cropley Avenue	Modify	No Action	No Action
7	Old Piedmont Road	Modify (C30, PC20)	No Action	No Action

CX = Closure for X number of days

PCX= Partial closure for X number of days

Three creek-crossing segments which were studied in the previous 2008 report are no longer being considered for modification or replacement. These segments were: Morrill Ave, Messina Drive, and Piedmont (south of Cropley).

## Section 3

### Setting

## SETTING

The Setting section of the report includes the following elements:

- Description of the existing street system
- Existing traffic volumes and levels of service
- Description of existing transit system
- Description of existing bicycle and pedestrian facilities.
- Description of planned roadway, transit, bicycle and pedestrian improvements.

### EXISTING STREET SYSTEM

The major streets in the vicinity of the project are shown in Figure 2.

Interstate 880, Interstate 680 and State Route (SR) 237 provide regional access to the Berryessa Creek study area.

**Interstate 880 (I-880)** is a six to eight lane north-south freeway in the vicinity of the Berryessa Creek study area. It connects the cities of Milpitas and San Jose with regional destinations such as Oakland and Fremont on the north and Campbell on the south. The average daily traffic (ADT) on I-880 in the vicinity of SR 237 is 133,000 to 174,000 vehicles per day. I-880 has interchanges with Calaveras Boulevard (SR 237), Montague Expressway and Great Mall Parkway near the study area.

**Interstate 680 (I-680)** is an eight lane north-south freeway that runs parallel to I-880. Interstate 680 connects the cities of Milpitas and San Jose on the south to regional destinations such as Fremont on the north and the Pleasanton-Livermore Tri Valley area to the north east. In the vicinity of the Berryessa Creek study area, I-680 has interchanges with Jacklin Road, SR 237 and Montague Expressway. The average daily traffic on I-680 near SR 237 is 147,000 to 152,000 vehicles per day.

**Calaveras Boulevard (SR 237)** is a major east-west signalized arterial roadway in the City of Milpitas, east of I-880. It runs for approximately 1.5 miles from I-880 on the west to I-680 on the east and serves as a regional freeway-to-freeway connector. It is a four to six lane road fronted mostly by retail and commercial uses. It continues east of I-680 to join Piedmont Road. The average daily traffic on SR 237 is 126,000 to 131,000 vehicles per day near its interchange with I-680.

**Montague Expressway** is a six to eight lane east-west expressway in the cities of Milpitas and San Jose. It runs for approximately 1.6 miles between I-880 and I-680. Montague Expressway has signalized intersections at South Main Street/Oakland Road, McCandless Drive/Trade Zone Boulevard, Great Mall Parkway/East Capitol Avenue and South Milpitas Boulevard.

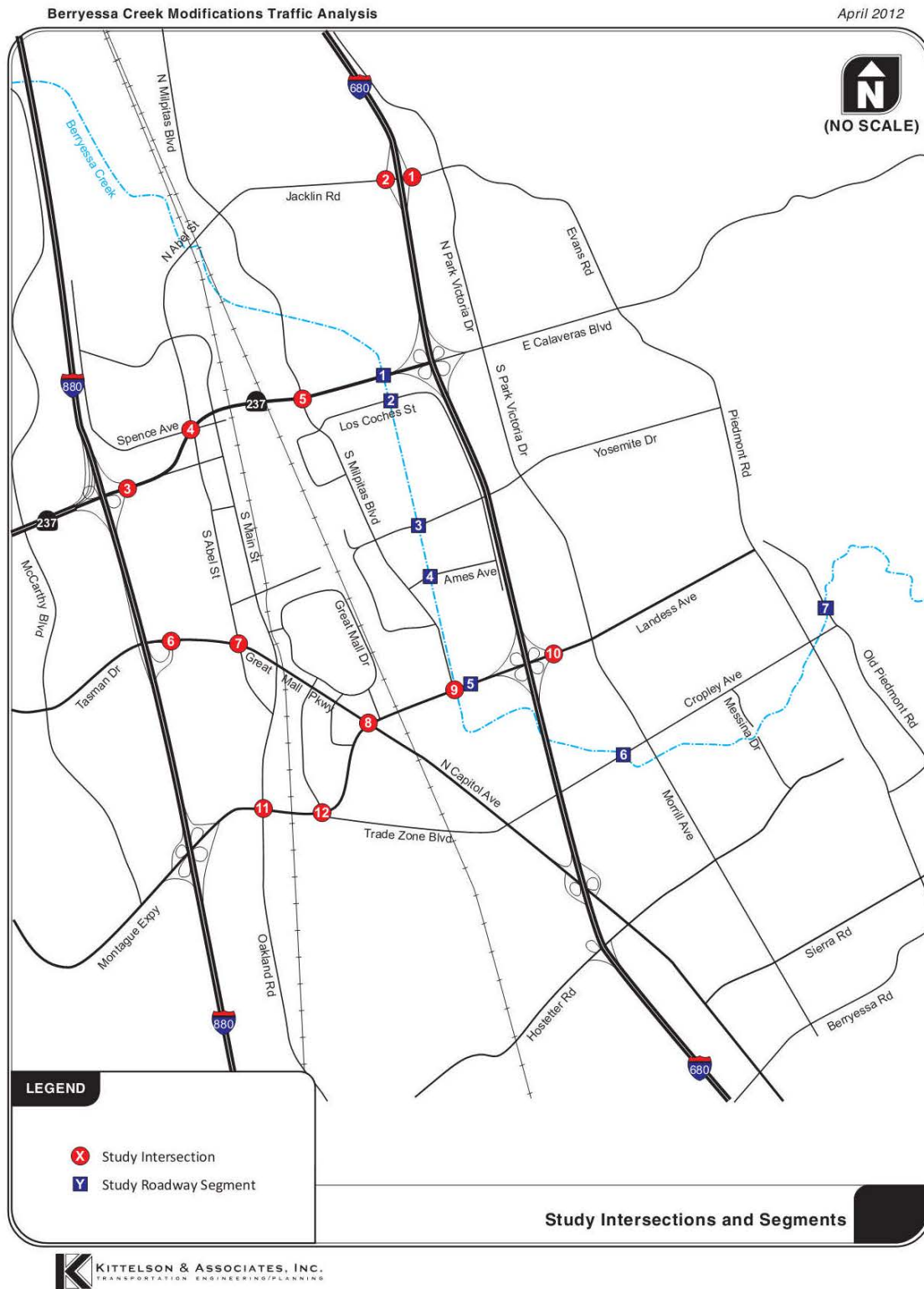


Figure 3: Study intersections and Segments

During the a.m. peak period from 6:00 a.m. to 9:00 a.m., one westbound through lane is restricted for high-occupancy vehicle (HOV) use; during the p.m. peak period from 3:00 p.m. to 7:00 p.m., one eastbound lane is restricted for HOV use. The HOV lanes are located east of the I-880 interchange and continue until just west of the I-680 interchange. The HOV lanes are currently in a three-to-five year trial period, but are assumed to still be in operation when the 2017 Berryessa Creek modifications take place.

**Great Mall Parkway** is a major six-lane east-west arterial roadway in the city of Milpitas. It provides access to the Great Mall and the Great Mall Transit Center. It forms a signalized intersection with Montague Expressway.

**Jacklin Road** is a four-lane east-west minor arterial roadway that connects to I-680 on the east and North Milpitas Boulevard on the west. West of North Milpitas Boulevard, Jacklin Road curves to become North Abel Street.

**Abel Street** is a minor north-south arterial roadway that runs approximately 2.5 miles to connect to Milpitas Boulevard on the north and Main Street on the south. It serves a variety of land uses to the east and west.

**Milpitas Boulevard** is a four-lane north south minor arterial roadway that joins Dixon Landing Road on the north and ends at Montague Expressway on the south.

**Main Street** is a two to four lane collector roadway that joins Weller Lane on the north. It merges into Abel Street south of Great Mall Parkway and joins Montague Expressway. It becomes Oakland Road south of Montague Expressway.

**Cropley Avenue** is a two to four lane east-west minor arterial roadway in the City of San Jose. The land use along Cropley Avenue is primarily residential. It forms a four lane overpass over I-680 and a signalized intersection with Morrill Avenue. It joins East Capitol Avenue on the west and runs approximately 1.8 miles to join Piedmont Road on the east.

**Morrill Avenue** is a two-lane major collector roadway with a center two-way left turn lane. It is fronted primarily by residential uses on both sides. This segment will not be affected by the project.

**Piedmont Road** is a two-lane north south minor arterial roadway that connects to East Calaveras Boulevard on the north and Penitencia Creek Road on the south. This segment will not be affected by the project.

**Old Piedmont Road** is a two-lane local street that dead ends near Landess Avenue. It serves residential uses on the northeast edge of San Jose.

**Los Coches Street** is a two-lane local street that joins Milpitas Boulevard to the west and curves to become Sinclair Frontage Road on the east.



**Yosemite Avenue** is a four-lane minor collector roadway that joins Piedmont Road on the east and curves into Gibraltar Drive on the west. It provides access to residential areas in east Milpitas and offices west of I-680.

**Ames Avenue** is a two-lane local street that provides access to the Ames Industrial Park including technology companies. It joins Sinclair Frontage Road on the east and Milpitas Boulevard on the west.

**Table 3: Summary of Roadway Facilities in Project Area**

Roadway	Functional Classification	Number of Lanes	On-Street Parking
I-880	Freeway	6-8	No
I-680	Freeway	8	No
Calaveras Boulevard	Major Arterial	6	Yes
Montague Expressway	Major Arterial	6-8	No
Great Mall Parkway	Major Arterial	6	No
Jacklin Road	Minor Arterial	4	No
Abel Street	Minor Arterial	4	No
Milpitas Boulevard	Minor Arterial	4	No
Main Street	Collector	2-4	Yes
Cropley Ave	Minor Arterial	2-4	Yes
Morrill Ave	Major Collector	2	Yes
Piedmont Road	Minor Arterial	2	No
Old Piedmont Rd	Local Street	2	No
Los Coches St	Local Street	2	Yes
Yosemite Ave	Minor Collector	4	Yes
Ames Ave	Local Street	2	Yes

## EXISTING TRAFFIC OPERATIONS

### Traffic Analysis Locations

Traffic operations were evaluated for the following 12 signalized intersections for the AM and PM peak hours as shown in Figure 3.

1. Jacklin Road & I-680 Northbound Ramps
2. Jacklin Road & I-680 Southbound Ramps
3. Calaveras Boulevard(Route 237) & I-880 NB Ramps
4. Calaveras Boulevard(Route 237) & Abel Street (CMP Intersection)
5. Calaveras Boulevard (Route 237) & Milpitas Boulevard(CMP Intersection)
6. Great Mall Parkway & I-880 NB Ramps
7. Great Mall Parkway & Abel Street
8. Montague Expressway & Capitol Avenue(CMP Intersection)
9. Montague Expressway & Milpitas Boulevard (CMP Intersection)
10. Montague Expressway & I-680 Northbound Ramps
11. Montague Expressway & Main Street/Old Oakland Road (CMP Intersection)
12. Montague Expressway & Trade Zone Blvd./ McCandless (CMP Intersection)

Traffic volumes were evaluated for 7 study street segments that could potentially be impacted by the project:

1. Calaveras Boulevard (Route 237) west of I-680 Ramps
2. Los Coches Road east of Milpitas Blvd.
3. Yosemite Dr. east of Milpitas Blvd.
4. Ames Avenue east of Milpitas Blvd.
5. Montague Expressway between Great Mall Parkway and I-680
6. Cropley Avenue east of I-680
7. Old Piedmont Road north of Cropley Avenue

## Level of Service

Roads and intersections are evaluated in terms of "level of service" (LOS), which is a measure of driving conditions and vehicle delay. Levels of service range from A (best) to F (poorest).

- Levels of service A, B and C indicate conditions where traffic can move relatively freely.
- Level of service D describes conditions where delay is more noticeable.
- Level of service E describes conditions where traffic volumes are at or close to capacity, resulting in significant delays and unstable traffic flow.
- Level of service F characterizes conditions where traffic demand exceeds available capacity, with very slow speeds (stop and go) and long delays and queuing at signalized intersections or on freeways and highways.

## Level of Service Standards

### *Caltrans*

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing measure of effectiveness (MOE) should be maintained (2).

### *Santa Clara County Congestion Management Program (CMP)*

According to Chapter 3 of the 2009 CMP publication (3), the "LOS standard is E, except where F was the LOS when originally measured, in which case the standard shall be F". The method of analysis is documented in "Traffic Level of Service Analysis Guidelines" (4). The document presents the LOS analysis methodologies that must be used to evaluate LOS on CMP roadway facilities within Santa Clara County. Chapter 1 describes the methodologies that must be used to evaluate traffic LOS for urban arterials, freeways and rural highways that are part of the CMP roadway network in Santa Clara County. Chapter 2 describes the software, TRAFFIX, approved by VTA as the standard traffic LOS analysis software package for CMP signalized intersections.

### *Santa Clara County*

Santa Clara County General Plan Policy C-TR 12 states "It is the goal of this plan to achieve a level of service (LOS) no lower than D at peak travel periods on city streets, county roads, expressways and state highways. However, in certain instances, a lower level of service may be acceptable when LOS D cannot practically be achieved." For instance, "many facilities already operating at LOS E or F would require a major investment in either roadway, transit or other types of improvements to bring it to LOS D" (5).

### ***City of Milpitas***

In the Circulation element of the Milpitas General Plan (6), the City outlines several principles that are relevant to this study:

**3.a-G-1:** Continue to utilize the City's adopted Level of Service standards in evaluating development proposals and capital improvements. Current City LOS standards apply only to development east of I-880.

**3.a-G-2:** Maintain acceptable service standards for all major streets and intersections.

**3.a-I-1:** Strive to maintain CMP LOS standards and goals for the CMP Roadway System in Milpitas.

**3.a-I-2:** For collectors and arterials east of Interstate 880 operating at baseline (1991) LOS F, require any development project that impacts the facility at or greater than one percent of facility capacity to implement mitigation measures to reduce the development project's impacts below the one percent level. If an identified location cannot be mitigated, measures designed to improve system-wide levels of service can be implemented. These system-wide improvement strategies will be contained in the Citywide Deficiency Plan.

### ***City of San Jose***

The City of San Jose General Plan policy on traffic states, "The minimum overall performance of City streets during peak travel periods should be level of service "D". A separate document by Santa Clara County compares San Jose's standard level of service to the CMP's by saying that "the City of San Jose level of service standard for signalized intersections is LOS D or better, whereas CMP level of service standard for signalized intersections is LOS E or better" (7).

## **Traffic Analysis Methodologies**

Signalized intersections are evaluated using the operational method from Chapter 16 of the HCM 2000. This method determines LOS for signalized intersections on the basis of average control delay. The VTA has standardized procedures for application of the HCM 2000 intersection analysis. The VTA Traffic LOS Guidelines specify the use of default saturation flow rates to ensure consistency of analysis for jurisdictions within the County. VTA has also established more detailed LOS grades that include "plus" and "minus" ratings for each LOS category (Table 1). The analysis of signalized intersections is implemented using the Traffix software with VTA defaults.

Montague Expressway operates with HOV lanes that are only in effect in one direction during each peak period, westbound during the AM peak period and eastbound during the PM peak period. Santa Clara County has established a calculation methodology to account for the reduced number of lanes available for vehicles in the remaining mixed flow lanes. In accordance with this approach used in the VTA CMP analysis, this study removes a through lane and reduces the approach volumes to represent the effects of the HOV lanes. This is done for the eastbound approaches at the Capitol Avenue and Milpitas

Boulevard intersections in the PM peak based on information received from staff at the Roads and Airport Department of Santa Clara County.

Table 4: Signalized Intersection Level of Service Criteria

LOS	Average Delay <sup>1</sup>	Description
A	< 10.00	Very Low Delay: This level of service occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all.
B+	10.1-12.0	Minimal Delays: This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay.
B	12.1-18.0	
B-	18.1-20.0	
C+	20.1-23.0	Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (to service all waiting vehicles) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.
C	23.1-32.0	
C-	32.1-35.0	
D+	35.1-39.0	Approaching Unstable/Tolerable Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
D	39.1-51.0	
D-	51.1-55.0	
E+	55.1-60.0	Unstable Operation/Significant Delays: This is considered by many agencies the upper limit of acceptable delays. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
E	60.1-75.0	
E-	75.1-80.0	
F	> 80.0	Excessive Delays: Describes operations with average delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation (i.e., when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

1. Weighted average of delay on all approaches (seconds/vehicle)

Source: VTA Traffic Level of Service Analysis Guideline, June, 2003; descriptions from Transportation Research Board, 2000 Highway Capacity Manual, Washington, D.C., 2000

## Existing (2012) Traffic Counts

The VTA CMP intersection databases from 2006, 2008 and 2010 contain the PM peak traffic counts at six Congestion Management Program (CMP) study intersections within the Berryessa Creek study area. As part of the previous 2008 Berryessa Creek traffic analysis, 2008 traffic counts were collected at several of the study intersections or estimated from older 2005 counts. In addition, 24-hour tube counts were conducted in 2008 at six study street segments, and counts for the remaining street segment were obtained from the City of Milpitas.

Existing (2012) traffic volumes were derived from a combination of data sources. For intersections where more than one data source was available, the highest volumes were used. For example, if both 2008 and 2010 counts were available—as was the case with intersections that are part of the Congestion Management Program (CMP)—the highest of the two years was used. Manual counts from

2008 were used without adjustment, as the traffic counts at the CMP intersections indicated no significant growth from 2008 to 2010.

Table 5 describes the data sources used to develop the Existing (2012) count data set and Table 6 shows the Existing (2012) turning movement volumes at the study intersections.

**Table 5: Existing (2012) Count Data Sources**

Intersection	Control	AM Peak	PM Peak
1. Jacklin Road & I-680 Northbound Ramps	Signal	N/A	2008 Counts
2. Jacklin Road & I-680 Southbound Ramps	Signal	N/A	2008 Counts
3. Calaveras Boulevard(Route 237) & I-880 NB Ramps	Signal	2008 estimated from 2005	2008 Counts
4. Calaveras Boulevard(Route 237) / Abel Street (CMP Intersection)	Signal	2008	VTA 2010
5. Calaveras Boulevard (Route 237) & Milpitas Boulevard (CMP Intersection)	Signal	2008	VTA 2010
6. Great Mall Parkway & I-880 NB Ramps	Signal	2008 estimated from 2005	2008 Counts
7. Great Mall Parkway & Abel Street	Signal	2008 estimated from 2005	2008 Counts
8. Montague Expressway & Capitol Avenue(CMP Intersection)	Signal	2008	VTA 2008
9. Montague Expressway & Milpitas Boulevard (CMP Intersection)	Signal	2008	VTA 2008
10. Montague Expressway & I-680 Northbound Ramps	Signal	2008	2008 Counts
11. Montague Expressway & Main Street/Old Oakland Road (CMP Intersection)	Signal	2008	VTA 2008
12. Montague Expressway & Trade Zone Boulevard/McCandless (CMP Intersection)	Signal	2008	VTA 2010-PM

N/A= a.m. counts were not collected in 2008, no analysis for a.m. peak

VTA= counts from the VTA Traffic Database

2008=count conducted in 2008

Table 6: Existing Turning Volumes at Study Intersections

PM Peak	Index	Major Road	Minor Road	Source	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
	1	Jacklin Road	I-680 NB Ramps	2008 Counts	0	0	0	73	339	0	143	3	500	0	599	165
	2	Jacklin Road	I-680 SB Ramps	2008 Counts	185	0	153	0	687	97	0	0	0	448	547	0
	3	Calaveras	I-880 NB Ramps	2008 Counts	0	0	0	195	1254	0	530	0	345	0	3116	0
	4	Calaveras	Abel	VTA 2010-PM	199	223	149	87	1277	235	499	339	57	21	2009	322
	5	Calaveras	Milpitas	VTA 2010-PM	265	183	186	235	1452	117	149	317	450	439	1855	321
	6	Great Mall	I-880 NB Ramps	2008 Counts	53	13	44	23	333	138	246	19	122	209	1993	14
	7	Great Mall	Abel	2008 Counts	52	299	107	84	501	67	57	344	69	330	1445	592
	8	Montague	Capitol	VTA 2008-PM	54	1400	740	293	929	192	262	323	216	248	1756	242
	9	Montague	Milpitas	VTA 2008-PM	463	0	493	146	1249	10	0	0	0	0	2691	464
	10	Montague	I-680 NB Ramps	2008 Counts	252	0	158	77	872	0	899	176	18	0	1541	267
	11	Montague	Main St/Oakland	VTA 2008-PM	215	553	187	144	1384	158	170	310	261	343	2793	461
	12	Montague	Trade Zone Boulevard	VTA 2010-PM	54	109	13	21	870	151	125	71	712	1180	2066	37
AM Peak	Index	Major Road	Minor Road	Source	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
	1	Jacklin Road	I-680 NB Ramps	N/A												
	2	Jacklin Road	I-680 SB Ramps	N/A												
	3	Calaveras	I-880 NB Ramps	2005 Adjusted	0	0	0	190	2968	0	301	0	338	26	961	0
	4	Calaveras	Abel	2008 Counts	535	329	75	62	2057	141	152	183	21	12	1072	120
	5	Calaveras	Milpitas	2008 Counts	362	224	127	176	1538	128	24	128	355	442	767	181
	6	Great Mall	I-880 NB Ramps	2005 Adjusted	10	8	7	12	1607	296	298	18	729	60	227	8
	7	Great Mall	Abel	2005 Adjusted	336	278	67	84	1475	50	27	236	140	62	350	122
	8	Montague	Capitol	2008 Counts	32	137	218	874	1806	80	171	869	272	55	586	141
	9	Montague	Milpitas	2008 Counts	385	0	73	420	2252	15	0	0	0	0	611	427
	10	Montague	I-680 NB Ramps	2008 Counts	287	0	44	49	1631	0	441	268	56	0	455	38
	11	Montague	Main St/Oakland	2008 Counts	396	148	141	161	2458	158	116	169	500	175	1369	214
	12	Montague	Trade Zone Boulevard	2008 Counts	23	57	3	18	1293	117	83	28	725	763	786	36

## EXISTING INTERSECTION OPERATIONS

Signalized intersections were evaluated using the operational method from Chapter 16 of the HCM 2000 as specified by the VTA (Table 7). Refer to Appendix 4 for the corresponding Traffic sheets.

**Table 7: Existing Level of Service at Study Intersections**

Intersection	AM Peak		PM Peak	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
1. Jacklin Road & I-680 Northbound Ramps	N/A		B	16.2
2. Jacklin Road & I-680 Southbound Ramps	N/A		B+	11.5
3. Calaveras Boulevard/ I-880 NB Ramps	B	12.6	B	16.8
4. Calaveras Boulevard/ Abel Street	D+	38.1	D	44.1
5. Calaveras Boulevard & Milpitas Boulevard	D	40.2	D	44.1
6. Great Mall Parkway & I-880 NB Ramps	C	27.1	C+	20.3
7. Great Mall Parkway & Abel Street	D	40.7	D+	36.7
8. Montague Expressway & Capitol Avenue	D	49.7	E+	56.6
9. Montague Expressway & Milpitas Boulevard	D	39.6	D+	35.1
10. Montague Expressway & I-680 Northbound Ramps	D	40.5	D	46.2
11. Montague Expressway & Main Street/Old Oakland	E	68.1	D-	54.8
12. Montague Expressway & Trade Zone Boulevard	F	94.8	F	81.4

The intersection of Montague Expressway and Trade Zone Boulevard operates at LOS F during both the AM and PM peak hours. The intersection of Montague Expressway and Main Street/Old Oakland operates at LOS E during the AM peak hour, while the intersection of Montague Expressway and Capitol Avenue operates at LOS E+ during the PM peak hour. All other study intersections operate at LOS D or better.

## EXISTING TRANSIT FACILITIES

Regional and local bus service in the study area is provided by the Santa Clara Valley Transportation Authority (VTA). The following VTA transit bus routes use streets and bus stops in the project area (locations refer to the creek crossing locations in Figure 3Error! Reference source not found.).



**Route 46**

Route 46 operates between the Great Mall transit center and the Milpitas High School. The route uses Montague Expressway, Calaveras Boulevard, and Jacklin Road. On weekdays, it operates from 6:00 a.m. to 8:00 p.m. at frequencies of 30 minutes. On Saturdays, it operates from 8:00 a.m. to 7:00 p.m. at frequencies of 60 minutes. On Sundays, it operates from 9:00 a.m. to 6:00 p.m. at frequencies of 60 minutes. It crosses Berryessa Creek at Montague Expressway east of Milpitas Boulevard (Location 5).

**Route 47**

Route 47 operates between the Great Mall transit center and the McCarthy Ranch Shopping Center via Montague Expressway, Park Victoria, and Calaveras Boulevard. On weekdays, it operates from 6:00 a.m. to 10:00 p.m. at frequencies of 30 minutes. On Saturdays, it operates from 8:00 a.m. to 8:00 p.m. at frequencies of 30 minutes. On Sundays, it operates from 9:00 a.m. to 8:00 p.m. at frequencies of 30 minutes. It crosses Berryessa Creek at Calaveras Boulevard west of I-680 and Montague Expressway east of Milpitas Boulevard (Locations 1 and 5).

**Route 70**

Route 70 operates between the Great Mall transit center near Great Mall Parkway in Milpitas and the Capitol LRT station near Capitol Expressway in San Jose. On weekdays, it operates from 5:00 a.m. to 11:00 p.m. at frequencies of 20 minutes. On weekends, it operates from 6:00 a.m. to 10:00 p.m. at frequencies of 30 minutes. It crosses Berryessa Creek at Montague Expressway just east of Milpitas Boulevard (Location 5) and Morrill Avenue south of Cropley Avenue.

**Route 71**

Route 71 operates between the Great Mall transit center near Great Mall Parkway in Milpitas and the Eastridge Transit Center near Capitol Expressway in San Jose. On weekdays, it operates from 5:00 a.m. to 10:00 p.m. at frequencies of 30 minutes. On weekends, it operates from 7:00 a.m. to 9:00 p.m. at frequencies of 30 minutes. It crosses Berryessa Creek at Montague Expressway east of Milpitas Boulevard (Location 5) and Piedmont Road south of Cropley Avenue.

**Route 104**

Route 104 Express operates between Deer Creek Road in Palo Alto and the Penitencia Creek Transit Center south of Berryessa Road in San Jose. On weekdays, two buses provide westbound service—from Penitencia Creek to Deer Creek—during the a.m. peak, from 6:00 a.m. to 8:00 a.m. Eastbound service is offered in the p.m. peak between 4:00 p.m. and 6:00 p.m. The route crosses over Berryessa Creek at Montague Expressway and Milpitas Boulevard (Location 5).

**Route 180**

Route 180 Express operates between the Fremont BART station and the San Jose Diridon Transit Center. On weekdays, it operates from 5:00 a.m. to 12 midnight at frequencies of 15 minutes. On Saturdays, it operates from 6:00 a.m. to 12 midnight at frequencies of 30 minutes. On Sundays, it operates from 7:00 a.m. to 12 midnight at frequencies of 30 minutes. Route 180 crosses over Berryessa Creek at Montague Expressway east of Milpitas Boulevard (Location 5).

**Route 217**

AC Transit Route 217 connects the Fremont BART with the Great Mall Transit Center. On weekdays, it operates from 5:00 a.m. to 11:00 p.m. at frequencies of 30 minutes. On weekends, it operates from 7:00 a.m. to 8:00 p.m. at 40 minute headways. It crosses Berryessa Creek at Calaveras Boulevard, just east of Milpitas Boulevard (Location 1).

**Regional Transit**

Regional and local light rail transit (LRT) service is also provided by VTA through the Alum Rock-Ohlone/Chrynoweth LRT line. The proposed VTA Bus Rapid Transit (i.e., *Valley Rapid*) will not serve the study area (8). A Bay Area Rapid Transit (BART) station at Montague Expressway and Capitol Avenue has recently begun construction and is slated to be completed by 2018. Depending on the exact construction schedule, the modifications at Berryessa Creek may impact BART's construction efforts.

## EXISTING PEDESTRIAN AND BICYCLE FACILITIES

In addition to conventional on-street pedestrian and bicycle facilities, the City of Milpitas offers several recreational trails. These trails typically run along the creeks, including the Berryessa Creek studied here. A detailed map of Milpitas' bicycle network can be found in Appendix 2.

**Table 8: Summary of Pedestrian and Bicycle Infrastructure in the Project Area**

Roadway	Functional Classification <sup>1</sup>	Sidewalks	Bicycle Lanes	On-Street Parking
I-880	Freeway	No	No	No
I-680	Freeway	No	No	No
Calaveras Boulevard	Major Arterial	Yes	No	Yes
Montague Expressway	Major Arterial	Yes	No	No
Great Mall Parkway	Major Arterial	Yes	Yes	No
Jacklyn Road	Minor Arterial	Yes	Yes	No
Abel Street	Minor Arterial	Yes	Yes	No
Milpitas Boulevard	Minor Arterial	Yes	Yes	No
Main Street	Collector	Yes	No	Yes
Cropley Ave	Minor Arterial	Yes	Yes	Yes
Morrill Ave	Major Collector	Yes	No	Yes
Piedmont Road	Minor Arterial	Yes	Yes	No
Old Piedmont Rd	Local Street	Yes	Yes	No
Los Coches St	Local Street	Yes	No	Yes
Yosemite Ave	Minor Collector	Yes	No	Yes
Ames Ave	Local Street	Yes	No	Yes

## PLANNED IMPROVEMENTS

### *Planned Roadway Improvements*

The City of Milpitas has retained the services of David J. Powers & Associates, Inc. to do a plan line study for the Montague Expressway Widening. The study is ongoing and scheduled to be completed by June 30, 2012. In the consultant's letter of transmittal, published through the City of Milpitas' website, there are references to "widening portions of Montague Expressway and replacing the existing concrete-box culvert over Berryessa Creek with a bridge". The plan is to add a fourth lane in both

directions of Montague Expressway, for approximately 0.9 miles. The project is in its early stages of environmental review, and is not expected to be completed by 2017.

In its 2035 Transportation Plan, the VTA briefly describes two projects which would impact the study area (9). The first one, called R12 Montague Expressway and Great Mall Pkwy./Capitol Ave. Grade Separation, proposes to “elevate Great Mall Pkwy./Capitol Ave. over Montague Expressway, placing it at the same level of the Tasman East Light Rail system. Montague Expressway and all turn movements will remain at-grade level.” This type of project does not seem to be consistent with the pedestrian-oriented Transit Area Specific Plan championed by the City of Milpitas. Steve Chen, traffic engineer at the City of Milpitas, considers this project extremely unlikely to be in place by 2017.

The second project, R11 Calaveras Boulevard Overpass Widening, seeks to “Replace the four-lane bridge over the Union Pacific railroad tracks with a new six-lane structure as well as new bicycle and pedestrian facilities on both sides.” The project also “includes intersection improvements at Abel St. and from the overpass west to Abbott Ave. on Calaveras Boulevard.”

The estimated costs of these projects are upward of \$60M and \$70M, respectively. They would be funded mostly by the VTA, but the City of Milpitas would have to contribute a significant amount. Because they are part of a long-term plan that is to be completed over the next 30 years—if or whenever funds are available—this report assumes that these VTA 2035 projects will not be completed by 2017.

The VTA’s 2040 plan, which is a work in progress, details two additional non-motorized transportation projects in the study area: an \$18.6M pedestrian overcrossing of Montague Expressway and a \$1.5M extension of the Berryessa Creek bicycle trail—which would connect it to the future Milpitas BART station. These projects are not expected to be completed by 2017 and would not have a noticeable impact on auto traffic volumes if they were.

Finally, the City of Milpitas considers an extension of Milpitas Boulevard to be a key priority in its Transit Area Specific Plan (TASP) EIR. The project would extend Milpitas Boulevard south of Montague Expressway, to connect it with Capitol Ave and alleviate congestion at the Great Mall Pkwy & Montague Expressway intersection (see Figure 4). Since this project is part of the BART extension and will be done in a design-build environment, it will likely be completed by the 2017 target date. The concept’s lane configuration and nearby signal timings were used to model the new intersections. Although these two intersections are not part of the scope of work, they nevertheless impact the operation of the study intersections on Montague Expressway and Capitol Avenue.



Figure 4: Milpitas Boulevard Extension (labeled South Milpitas Boulevard). Source: BART Silicon Valley & VTA (May 2011)

### ***Planned Bicycle and Pedestrian Improvements***

In its most recent assessment of bicycle facilities (10), the City of Milpitas found several opportunities to connect residents with the Bay Area transit network through bicycling facilities. It also identified Abel Street and Milpitas Boulevard as potential links to neighboring cities (Fremont and San Jose, respectively). Constraints to the bicycle connections included I-880 and I-680, railroad tracks, and the three Milpitas creeks (including the Berryessa Creek that is the subject of this study). The study also noted the lack of a grid-like street network and pedestrian cut-throughs, which results in an increase in the distance that pedestrians must travel.

A prioritization list published in the report found that the Berryessa Creek recreational bicycle trail was the most important of all the “priority trails” in the city. The trail ranked highest in terms of quality of transportation, anticipated level of use, connection to residences, and ability to fill park and open space deficiencies. Extending for 4.5 miles, the Berryessa Creek trail crosses the entire project area.



**Figure 5: Berryessa Creek Trail, near Calaveras Boulevard.**

*Source: Flickr's "Pay a Bluish Oak"*

## Section 4

### Impacts and Mitigation Measures



## IMPACTS AND MITIGATION MEASURES

This section includes the significance criteria for evaluation of transportation impacts, the methodology for evaluating changes in traffic volumes, and impacts and mitigation measures.

Transportation impacts were evaluated relative to conditions which were projected to exist in the year 2017, representing the latest year when construction activities would be likely to occur. The construction elements which were determined to have the greatest potential impacts on traffic operations in the study area due to potential traffic diversion are:

- Temporary partial closure of lanes on Montague Expressway
- Temporary partial closure of lanes on Calaveras Boulevard

A more detailed quantitative analysis of traffic diversions and impacts was conducted for these two closures. Full or partial closures of lanes on other roads were evaluated in terms of diversions and changes in traffic volumes, but not using a detailed traffic operations analysis at intersections.

## SIGNIFICANCE CRITERIA

All of the potential transportation impacts of the Berryessa Creek project would be temporary in nature. All facilities would be returned to their current configurations and capacities once construction is complete. There would be no permanent transportation impacts related to this project.

While the following significance criteria are intended for use by projects with permanent impacts, these criteria can be used as a guide for the evaluation of potential temporary impacts. Note that even temporary impacts may warrant mitigation during the construction period.

### *Traffic Operations Impacts*

Traffic operations impacts for roads within Santa Clara County jurisdiction were evaluated using the significance standards developed by the Santa Clara Valley Transportation Authority (VTA).

The CMP traffic LOS standard is LOS E. If the analysis shows that a development project is projected to cause traffic LOS on a CMP facility (roadway or intersection) to fall from LOS E or better to LOS F under project conditions, then the project is said to impact the facility. In addition, for facilities determined to have been at LOS F under existing or background conditions, a project is said to impact the facility if the analysis shows that the project will cause LOS to deteriorate by a given threshold amount. If an intersection is already at LOS F without the project, a project is said to have a significant impact if:

- The addition of the project traffic increases the average delay for critical movements by four (4) seconds or more, and
- The project traffic increases the critical v/c value by 0.01 or more.



The exception to this threshold is when the addition of project traffic reduces the amount of average delay for critical movements, i.e., the change in average control delay for the critical movement is negative. In this case, the applicable threshold is an increase in the critical v/c value of 0.01 or more.

### ***Local Circulation Impacts***

For the purposes of this study, the project would impact local traffic circulation if traffic diversion would increase traffic demand on a detour route to levels greater than the capacity of the detour route, or if detours would cause significant increases in out-of-direction travel.

### ***Transit Impacts***

For the purposes of this study, the project would impact transit if it would increase delays on transit routes requiring reallocation of transit vehicles.

### ***Bicycle Impacts***

For the purposes of this study, the project would impact bicycle travel if it created particularly hazardous conditions for bicyclists or eliminated bicycle access to adjoining areas.

### ***Pedestrian Impacts***

For the purposes of this study, the project would impact pedestrians if it resulted in overcrowding on public sidewalks, created particularly hazardous conditions for pedestrians or eliminated pedestrian access to adjoining areas.

## **METHODOLOGY AND ASSUMPTIONS**

This section describes the 2017 No Project traffic volumes and traffic operations, and the methodology used to estimate potential traffic changes due to diversions caused by partial closure of Montague Expressway or Calaveras Boulevard.

### **2017 No Project Traffic Forecasts**

Traffic volumes for the 2017 No Project scenario were estimated by applying a growth factor of 1.07 to the existing traffic counts. This traffic growth is based on historical trends and a qualitative assessment of the Milpitas economic situation. In addition to this linear, area-wide growth, adjustments were made to account for several planned developments on Montague Expressway, near the future site of the Milpitas BART station.

A growth of 1% per year was derived based on a comparison of historical traffic counts for the CMP intersections from years 2002 to 2006. While there was little to no growth between 2006 and 2010, there is expectation that traffic will increase again as a result of the ongoing economic recovery. The 1%

rate was then projected linearly from 2010 to 2017 for a growth factor of 1.07. The traffic volumes for the baseline 2017 scenario are the result of:

1. A 7% growth over the 2010 volumes
2. Additional trips from the approved developments according to the Transit Area Specific Plan EIR
3. Adjustments at Montague Expressway and Capitol Ave to account for the Milpitas Boulevard extension

When averaging across all intersections, 2017 volumes at the study intersections are estimated to be about 12% higher than 2010 volumes. Table 12: 2017 Base Turning Movements at Study Intersections breaks down the base 2017 volumes at the study intersections.

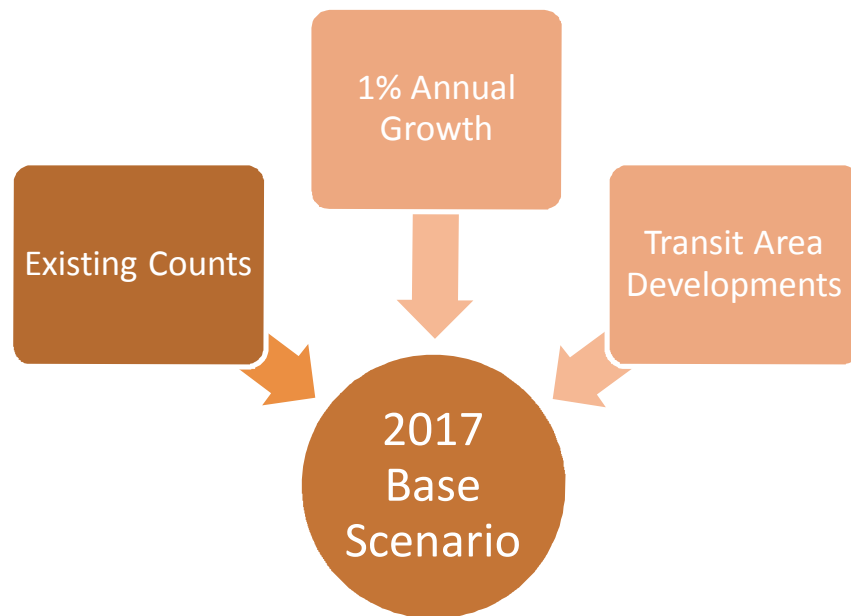


Figure 6: Schematic of Future Volume Generation

## Planned Developments

The imminent construction of the Milpitas BART station on Montague Expressway & Great Mall Pkwy has jumpstarted a wave of transit-oriented development in the city (11). Just in the past year, the City has approved construction of at least 2500 dwelling units near Montague Expressway.

**Table 9: Approved Projects in the Study Area**

Project	Dwelling Units
Citation Homes	732
McCandless	1,154
Shea Properties	204
Harmony Development	276
Contour Residential	134
SUM	2,500

Sheldon Ah Sing, Senior Planner for the City of Milpitas, confirmed that entitlements have been granted to some of the developers, including Citation Homes (see Figure 7), and that they would be able to finish before 2017 if they so desired. One of the developers, Shea Properties, expects to break ground in the summer of 2012 and complete building their 204-unit complex in two years (12). Therefore, this report assumes that the developers listed in Table 9 will build the residences in the next few years, such that the full effect of their projects would be felt by 2017.



**Figure 7: Citation Homes, one of the several high-density, mixed-use developments approved by the City of Milpitas.**

**Table 10: Summary of TASP Project Trip Generation. Source: Milpitas TASP EIR (1)**

Type	Size	AM			PM		
		In	Out	Total	In	Out	Total
Net Commercial	520,026 sf	564	269	833	876	826	1,702
Net Office	813,343 sf	1,074	119	1,193	238	955	1,193
Net Residential	7,185 du	792	3,218	4,010	3,480	1,409	4,889
Existing Uses – Industrial Park	2,977,555 sf	2,358	262	2,620	572	2,286	2,858

**Table 11: Estimates of 2017 Approved Development Trips**

Type	Size	AM			PM		
		In	Out	Total	In	Out	Total
Approved Projects (Net Residential prorated by DUs)	2,500 du	276	1,120	1,396	1,211	490	1,701
Existing Use at Approved Projects (Existing Uses prorated by sq. ft. and DUs)	572,090 sf	-453	-50	-503	-110	-439	-549
Milpitas Internal Trip Reduction (Based on TASP trip distribution)	-25% of Net	0	-268	-268	-275	-13	-288
<b>New Trips</b>		<b>0</b>	<b>803</b>	<b>803</b>	<b>826</b>	<b>38</b>	<b>864</b>

Table 10 shows a summary of the commercial, office and residential approved developments included in the TASP study by Fehr and Peers (1). The Milpitas TASP calls for the creation of more than 7,000 dwelling units, which would spur 48,969 daily trips (3,400 in the AM peak and 4,613 in the PM peak). However, the TASP has a planning horizon of 20 years and thus not all of the development will be in place by 2017. This report assumed that only developments which have been approved as of April 2012 (i.e., those in Table 9) will be built by 2017. The number of trips presented in the TASP traffic section was adjusted accordingly to reflect this.

The net new trips from the approved projects were estimated as the new trips from the 2,500 dwelling units expected to be built by 2017 minus the trips from the Existing Uses (Industrial Park) that will be replaced by these residential units and the trips that are internal to Milpitas and will not use the freeways. The commercial and office portions of the approved land use were not assumed to be built by 2017.

Assuming that developers move forward with their plans, there could be an increase of 803 AM trips and 864 PM trips by the time construction is completed. Most of the new development trips would use either Montague Expressway or Great Mall Parkway. Since the new developments are all between I-680 and I-880, the new trips were distributed evenly to these two freeways. Trips going to or from I-880 were further split among Great Mall Pkwy and Montague Expressway. In and Out splits were taken from the TASP study.

Table 12: 2017 Base Turning Movements at Study Intersections

PM Peak	Index	Major Road	Minor Road	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
	1	Jacklin Road	I-680 NB Ramps	0	0	0	78	363	0	153	3	535	0	641	177
	2	Jacklin Road	I-680 SB Ramps	198	0	164	0	735	104	0	0	0	479	585	0
	3	Calaveras	I-880 NB Ramps	0	0	0	209	1342	0	567	0	369	0	3334	0
	4	Calaveras	Abel	213	239	159	93	1366	251	534	363	61	22	2150	345
	5	Calaveras	Milpitas	284	196	199	251	1554	125	159	339	482	470	1985	343
	6	Great Mall	I-880 NB Ramps	57	14	47	25	366	148	263	20	131	224	2339	15
	7	Great Mall	Abel	56	320	114	90	546	72	61	368	74	353	1959	633
	8	Montague	Capitol	58	1498	998	323	1004	104	207	346	231	265	2292	259
	9	Montague	Milpitas	495	0	528	156	1749	112	69	4	0	0	2898	496
	10	Montague	I-680 NB Ramps	270	0	169	82	933	0	962	188	19	0	1649	286
	11	Montague	Main St/Oakland	230	592	200	154	1490	169	182	332	279	367	3195	493
	12	Montague	Trade Zone	58	117	14	22	940	162	134	76	762	1263	2417	40
AM Peak	Index	Major Road	Minor Road	SBR	SBT	SBL	WBR	WBT	WBL	NBR	NBT	NBL	EBR	EBT	EBL
	1	Jacklin Road	I-680 NB Ramps												
	2	Jacklin Road	I-680 SB Ramps												
	3	Calaveras	I-880 NB Ramps	0	0	0	203	3176	0	322	0	362	28	1028	0
	4	Calaveras	Abel	572	352	80	66	2201	151	163	196	22	13	1147	128
	5	Calaveras	Milpitas	387	240	136	188	1646	137	26	137	380	473	821	194
	6	Great Mall	I-880 NB Ramps	11	9	7	13	1920	317	319	19	780	64	243	9
	7	Great Mall	Abel	360	297	72	90	1779	54	29	253	150	66	375	131
	8	Montague	Capitol	34	147	233	1136	2133	58	116	930	291	59	627	151
	9	Montague	Milpitas	412	0	78	449	2410	44	64	3	0	0	1055	457
	10	Montague	I-680 NB Ramps	307	0	47	52	1745	0	472	287	60	0	487	41
	11	Montague	Main St/Oakland	424	158	151	172	2831	169	124	181	535	187	1465	229
	12	Montague	Trade Zone	25	61	3	19	1584	125	89	30	776	816	841	39

## 2017 No Project Intersection Operations

In the existing (2012) scenario presented in Table 6, only one intersection was below the LOS standard of E: Montague Expressway & Trade Zone Boulevard. Under the 2017 base conditions, this intersection is expected to operate at LOS F during the AM and PM peak hours. Table 13 summarizes the level of service of the study intersections in the baseline (i.e., without the Berryessa Creek modifications) 2017 scenario. The Existing 2012 LOS and delay are included in Table 13 for comparison purposes. Refer to Appendix 4 for the corresponding Traffic sheets.

**Table 13: Base 2017 Scenario Intersection Level of Service**

(Delay in sec/veh)	Existing				2017 Base			
	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Jacklin Road & I-680 Northbound Ramps	N/A		B	16.2	N/A		B	16.3
2. Jacklin Road & I-680 Southbound Ramps	N/A		B+	11.5	N/A		B+	11.8
3. Calaveras Boulevard/ I-880 NB Ramps	B	12.6	B	16.8	B	13.3	B-	18.1
4. Calaveras Boulevard/ Abel Street	D+	38.1	D	44.1	D	40.0	D	46.5
5. Calaveras Boulevard & Milpitas Boulevard	D	40.2	D	44.1	D	42.5	D	48.8
6. Great Mall Parkway & I-880 NB Ramps	C	27.1	C+	20.3	C	29.9	C+	21.5
7. Great Mall Parkway & Abel Street	D	40.7	D+	36.7	D	40.7	D+	35.9
8. Montague Expressway & Capitol Avenue	D	49.7	E+	56.6	E+	57.6	E	61.0
9. Montague Expressway & Milpitas Boulevard	D	39.6	D+	35.1	D	50.7	D	43.2
10. Montague Expressway & I-680 Northbound Ramps	D	40.5	D	46.2	D	44.7	D-	51.1
11. Montague Expressway & Main Street/Old Oakland	E	68.1	D-	54.8	E-	75.7	E	64.8
12. Montague Expressway & Trade Zone Boulevard	F	94.8	F	81.4	F	96.3	F	91.9

## TRAFFIC DIVERSION ANALYSIS

Under Berryessa Creek A or B construction alternatives, there would be partial closure of lanes on Montague Expressway and Calaveras Boulevard (not at the same time). Since these roads are major arterial routes, lane closures would be expected to cause diversions to alternate routes. The potential impacts of the partial closures were evaluated by estimating traffic diversions during the temporary closures and analyzing traffic operations with the diverted traffic.

### *Traffic Volumes*

Engineering judgment was used to determine the number of vehicles that would seek alternate routes given the partial closures at Montague Expressway and Calaveras Boulevard. In both scenarios, it was assumed that 50% of the traffic in each direction at the closure locations would divert. The alternate routes for the Calaveras Boulevard closure were Great Mall Pkwy and Montague Expressway. For the Montague Expressway closure, the alternate routes were assumed to be Great Mall Pkwy, Calaveras Boulevard, and Capitol Ave. The diverted traffic was split evenly between northerly and southerly destinations (i.e., half were assumed to go north and half were assumed to go south.)

### ***Calaveras Boulevard Diversion***

Calaveras Boulevard bridge construction would occur at the Berryessa Creek crossing east of North Hillview Drive.

The A Alternatives for Berryessa Creek would modify the structure at Calaveras Boulevard, requiring closure of one of the six lanes for a period of 30 days. The B Alternatives for Berryessa Creek would replace the structure at Calaveras Boulevard, requiring closure of three of the six lanes for a period of 120 days. Partial traffic flow would be maintained at all times by restriping the open portion of the roadway to two lanes in each direction.

It is assumed that with partial closure of Calaveras Boulevard, 50 percent of the traffic in each direction would choose to divert from Calaveras Boulevard to alternative routes. Existing traffic counts at each intersection on Calaveras Boulevard were used to estimate the origins and destinations of traffic through the affected area. Based on proportions of turn movements, it was estimated that approximately 50 percent of the traffic in each direction is destined towards the north and 50 percent towards the south. Although several alternative routes would be available, as a conservative analysis all diverted traffic was assumed to use Great Mall Parkway and Montague Expressway to cross between I-880 and I-680 in each direction.

### ***Montague Expressway Diversion***

The A Alternatives for Berryessa Creek would modify the structure at Montague Expressway, requiring closure of one of the seven lanes for a period of 10 days. The B Alternatives would include bridge replacement on Montague Expressway. Based on the description received from TetraTech, this would

involve partial road closure on Montague Expressway for a period of 120 days. Partial traffic flow would be maintained at all times by restriping the roadway to two lanes in each direction.

It is assumed that due to partial closure of Montague Expressway, 50 percent of the traffic in each direction would divert away from Montague Expressway onto parallel roadways like Calaveras Boulevard and Great Mall Parkway.

### *Intersection Geometry in Montague Expressway*

Of the study intersections, the only one near a proposed closure point is Montague Expressway & Milpitas Blvd. For this reason, all other intersections were assumed to retain their original, base geometry. For the Montague Expressway partial closure, this intersection is expected to be completely reconfigured during construction of the Berryessa Creek modifications. The schematic below shows the base and project lane configurations.

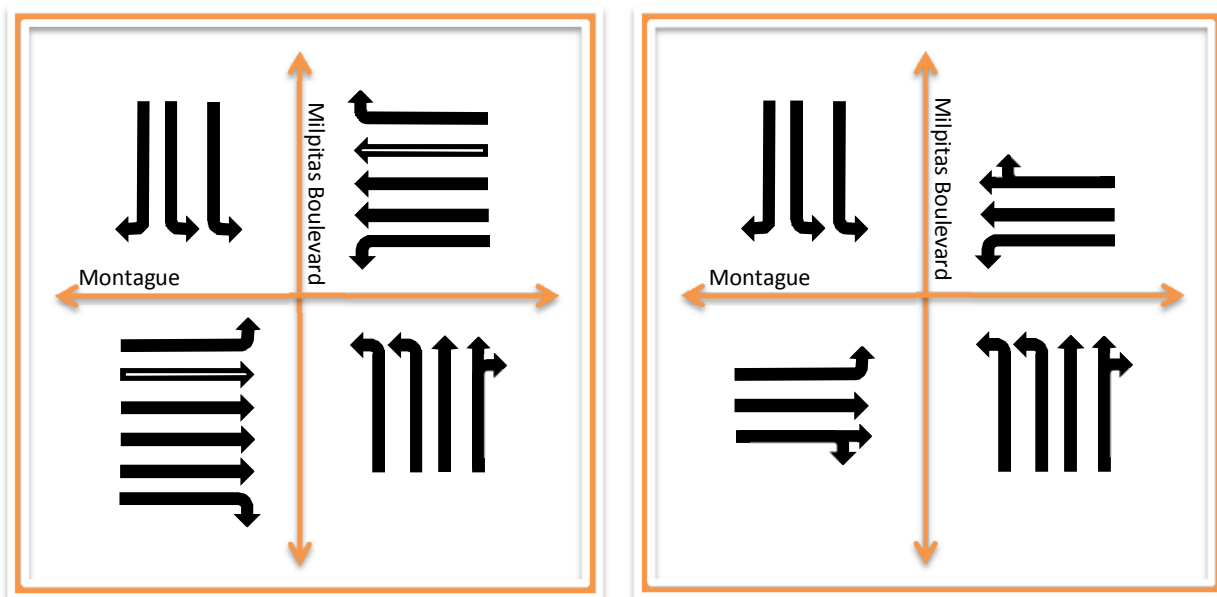


Figure 8: Lane Geometries at Montague Expressway & Milpitas Boulevard- Base 2017 (left) v. Closure (right). HOV lanes indicated by hollowed-out arrows

## TRAFFIC OPERATIONS

The following two tables summarize the level of service at the study intersections during each closure scenario. The 2017 base levels of service presented above are included in these “plus project” tables for easy comparison. Intersection volumes were adjusted for diverted traffic with partial closure of Calaveras Boulevard. Table 14 shows the results of the intersection level of service analysis for the partial closure of Calaveras Boulevard. Refer to Appendix 6 for the Traffic sheets corresponding to the Calaveras Boulevard partial closure and to Appendix 7 for the Montague Expressway partial closure.



**Impact 1: Construction Alternatives A or B would cause temporary significant impacts at three locations, at the intersections of Montague Expressway with Capitol Avenue, Montague Expressway with Main Street and Montague Expressway with Trade Zone Boulevard.**

**Table 14: Year 2017 Level of Service - Calaveras Boulevard Partial Closure**

(Delay in sec/veh)	2017 Base				2017 Calaveras Partial Closure			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Jacklin Road & I-680 Northbound Ramps	N/A		B	16.3	N/A		B	16.3
2. Jacklin Road & I-680 Southbound Ramps	N/A		B+	11.8	N/A		B+	11.8
3. Calaveras Boulevard/ I-880 NB Ramps	B	13.3	B-	18.1	B	12.5	B	13.9
4. Calaveras Boulevard/ Abel Street	D	40.0	D	46.5	D	39.2	D	44.8
5. Calaveras Boulevard & Milpitas Boulevard	D	42.5	D	48.8	D	40.0	D	43.0
6. Great Mall Parkway & I-880 NB Ramps	C	29.9	C+	21.5	C-	32.8	C-	34.2
7. Great Mall Parkway & Abel Street	D	40.7	D+	35.9	D	40.1	D+	35.8
8. Montague Expressway & Capitol Avenue	E+	57.6	E	61.0	F	83.8	E	63.0
9. Montague Expressway & Milpitas Boulevard	D	50.7	D	43.2	D-	54.6	D	50.6
10. Montague Expressway & I-680 Northbound Ramps	D	44.7	D-	51.1	D	44.7	D-	51.1
11. Montague Expressway & Main Street/Old Oakland	E-	75.7	E	64.8	F	97.3	F	98.7
12. Montague Expressway & Trade Zone Boulevard	F	96.3	F	91.9	F*	124.5	F*	114.8

\* Although these intersections were failing without the project, the impact is considered significant because delay was observed to increase by more than four seconds

During the AM peak hour, the LOS at the Montague/Capitol Avenue intersection would change from E under 2017 Base (No Project) to F under Calaveras Boulevard Partial Closure.

During the AM and PM peak hour, the LOS would change from E under 2017 Base to F under Calaveras Boulevard Partial Closure.

During the AM and PM peak hour, the LOS at the Montague/Trade Zone intersection under 2017 Base (No Project) and 2017 with Calaveras Boulevard Partial Closure would be LOS F. The Calaveras closure would add more than 4 seconds of delay to the critical movements during the AM and PM peak.

**Mitigation 1a.** *The project sponsor shall coordinate with Santa Clara County to monitor traffic operations at the intersection of Montague and Capitol, and if necessary, revise signal timings and/or implement manual traffic control during peak periods at the intersection during the period of partial closure of Calaveras Boulevard. Implementation of Mitigation 1a would reduce the temporary impact to a **less than significant** level.*

A traffic operations analysis using Traffix software indicated that optimizing the cycle length would bring the LOS from F to an acceptable LOS E.

**Mitigation 1b.** *Implement Mitigation 1a at the intersection of Montague and Main. No other mitigation is feasible. The impact at this location would be a temporary **significant and unavoidable** impact.*

**Mitigation 1c.** *Implement Mitigation 1b at the intersection of Montague and Trade Zone. No other mitigation is feasible. The impact at this location would be a temporary **significant and unavoidable** impact.*

**Impact 2: Construction Alternatives A or B would cause temporary significant impacts at the intersection of Montague and Trade Zone Boulevard.**

**Mitigation 2a.** *Implement Mitigation 1a at the intersection of Montague and Trade Zone Boulevard. No other mitigation is feasible. The impact at this location would be a temporary **significant and unavoidable** impact.*

**Note that significant and unavoidable Impacts 1 and 2 at the intersections of Montague with Main and Montague with Trade Zone were also identified as “significant and unavoidable” impacts in the TASP EIR due to growth in traffic volumes from the approved projects that are part of the TASP.**

(Delay in sec/veh)	2017 Base				2017 Montague Partial Closure			
Intersection	AM Peak		PM Peak		AM Peak		PM Peak	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. Jacklin Road & I-680 Northbound Ramps	N/A		B	16.3	N/A		B	16.3
2. Jacklin Road & I-680 Southbound Ramps	N/A		B+	11.8	N/A		B+	11.8
3. Calaveras Boulevard/ I-880 NB Ramps	B	13.3	B-	18.1	B-	19.9	D+	37.0
4. Calaveras Boulevard/ Abel Street	D	40.0	D	46.5	D	42.0	D	49.7
5. Calaveras Boulevard & Milpitas Boulevard	D	42.5	D	48.8	D	48.0	E	59.7
6. Great Mall Parkway & I-880 NB Ramps	C	29.9	C+	21.5	C	31.4	C-	32.5
7. Great Mall Parkway & Abel Street	D	40.7	D+	35.9	D	39.9	D+	35.7
8. Montague Expressway & Capitol Avenue	E+	57.6	E	61.0	E-	79.5	E	63.3
9. Montague Expressway & Milpitas Boulevard	D	50.7	D	43.2	E+	57.7	D-	53.9
10. Montague Expressway & I-680 Northbound Ramps	D	44.7	D-	51.1	C-	33.8	D	47.3
11. Montague Expressway & Main Street/Old Oakland	E-	75.7	E	64.8	E-	78.3	E+	60.0
12. Montague Expressway & Trade Zone Boulevard	F	96.3	F	91.9	F*	146.7	F*	154.3

## LOCAL CIRCULATION

**Impact 3: Complete closure of Old Piedmont Road (Authorized Plan) would require traffic to divert to alternative routes. This would be a less than significant impact.**

Closure of Old Piedmont Road (Location 10) would require diversion to alternative routes such as Piedmont Road, Bloomsbury Way and Tunis Road. The temporary diversion would last up to 30 days under the Authorized Plan. The number of vehicles impacted would be less than 40 during peak hours. The diverted vehicles would be well within the capacity of the alternative routes. The out-of-direction travel would typically be less than one-half mile.

***Mitigation 3: None required.***

**Impact 4: Complete closure of Los Coches Street east of Piedmont Road (B alternatives) would require traffic to divert to alternative routes. This would be a less than significant impact.**

Closure of Los Coches Street (Location 2) would require diversion to alternative routes such as Yosemite Drive. The temporary diversion would last up to 60 days with the B alternatives. The number of vehicles impacted would be up to 550 during peak hours. The diverted vehicles would be within the capacity of the alternative routes. The out-of-direction travel would be up to 1.5 miles.

***Mitigation 4: None required.***

**Location 3: Yosemite Drive.** Partial closure of Yosemite Drive would involve the closure of one traffic lane. Traffic would continue to use two lanes in one direction but only one lane in the other direction. This would add delays to traffic on Yosemite Drive but would not require diversion to alternative routes.

**Location 4: Ames Avenue.** Partial closure of Ames Avenue would involve the closure of one traffic lane for a duration of up to 10 days. The traffic flow on Ames Avenue could be maintained on the single available lane using construction flagging during the period of lane closure. The use of construction flagging would add delay to the traffic on Ames Avenue as only one direction of traffic could be served at a time. Ames Avenue carries 283 AM peak hour trips and 278 PM peak hour trips. A portion of this traffic may divert to alternate routes like Sinclair Frontage Road and Yosemite Avenue (if the partial closure on Yosemite Avenue is not concurrent with Ames Avenue). This would result in additional delays to traffic on the alternate routes.

## TRANSIT

**Impact 5: Partial closures of streets would temporarily increase delays for transit vehicles during the construction period. This would be a temporary significant impact.**

VTA transit bus routes that use streets and bus stops in the project area would be impacted due to partial lane closures. Routes 46, 70, 71, 104 and 180 would experience additional delays due to the

partial closure of Montague Expressway. Route 47 would experience additional delays due to the partial closures of both Calaveras Boulevard and Montague Expressway.

**Mitigation 5** *The project sponsor shall coordinate with Santa Clara VTA to identify the schedule of lane closures and, if necessary, provide for temporary manual traffic control to give priority for transit vehicles through congested corridors during the construction period. Implementation of Mitigation 8 will reduce the temporary impact to a less than significant level.*

## BICYCLE CIRCULATION

**Impact 6: Full closures of streets (all alternatives) would temporarily require bicycles to use alternative routes during the construction period. This would be a temporary significant impact.**

The Authorized Plan includes full closure of Old Piedmont Road for 30 days. The B alternatives include full closure of Los Coches Street for 60 days. Pedestrians would need to use alternate routes during these closure periods.

**Mitigation 6:** *The project sponsor shall prepare traffic management plans which include advance notice of street closures so that bicyclists who typically use the creek crossings can identify alternative routes. Implementation of Mitigation 9 will reduce the temporary impact to a less than significant level.*

## PEDESTRIAN CIRCULATION

**Impact 7 Full closures of streets (all alternatives) would temporarily require pedestrians to use alternative routes during the construction period. This would be a temporary significant impact.**

The Authorized Plan includes full closure of Old Piedmont Road for 30 days. The B alternatives include full closure of Los Coches Street for 60 days. Pedestrians would need to use alternate routes during these closure periods.

**Mitigation 7:** *The project sponsor shall prepare traffic management plans which include advance notice of street closures so that pedestrians who typically use the creek crossings can identify alternative routes. Implementation of Mitigation 10 will reduce the temporary impact to a less than significant level.*

**Impact 8: Partial closures of streets (all alternatives) would temporarily require pedestrians to use the other side of the street during the construction period. This would be a less than significant impact.**

During the partial lane closures, it will be necessary to close the sidewalk on one side of the street at each location. Pedestrians will need to detour to the sidewalk on the other side of the street. This closure will cause some inconvenience at these locations but will not cause significant increases in delay for pedestrian movements.

Interruptions to pedestrian traffic may occur due to other construction activities like floodplain excavation or floodwall construction.

***Mitigation 8: None required.***

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Appendix 1      Description of  
Level-of-Service  
Methods and  
Criteria

Level of service (LOS) is a concept developed to quantify the degree of comfort (including such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles) afforded to drivers as they travel through an intersection or roadway segment. Six grades are used to denote the various level of service from “A” to “F”. Most of the material in this appendix is adapted from the Transportation Research Board, Highway Capacity Manual, (2000).

### Signalized Intersections

The six level-of-service grades are described qualitatively for signalized intersections in the table below. Additionally, the table in the next page identifies the relationship between level of service and average control delay per vehicle. Control delay is defined to include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Using this definition, Level of Service “D” is generally considered to represent the minimum acceptable design standard. However, jurisdictions are free to choose their standard Level of Service.

Level-of-Service Definitions (Signalized Intersections)

Level of Service	Average Delay per Vehicle
A	Very low average control delay, less than 10 seconds per vehicle. This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Average control delay is greater than 10 seconds per vehicle and less than or equal to 20 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for a level of service A, causing higher levels of average delay.
C	Average control delay is greater than 20 seconds per vehicle and less than or equal to 35 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Average control delay is greater than 35 seconds per vehicle and less than or equal to 55 seconds per vehicle. The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle length, or high volume/capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Average control delay is greater than 55 seconds per vehicle and less than or equal to 80 seconds per vehicle. This is usually considered to be the limit of acceptable delay. These high delay values generally (but not always) indicate poor progression, long cycle lengths, and high volume/capacity ratios. Individual cycle failures are frequent occurrences.
F	Average control delay is in excess of 80 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also contribute to such high delay values.

## Level-of-Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

## Unsignalized Intersections

Unsignalized intersections include two-way stop-controlled (TWSC) and all-way stop-controlled (AWSC) intersections. The 2000 Highway Capacity Manual (HCM) provides models for estimating control delay at both TWSC and AWSC intersections. A qualitative description of the various service levels associated with an unsignalized intersection is presented in Table B3. A quantitative definition of level of service for unsignalized intersections is presented in Table B4. Using this definition, Level of Service “E” is generally considered to represent the minimum acceptable design standard.

## Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Delay per Vehicle to Minor Street
A	<ul style="list-style-type: none"> <li>Nearly all drivers find freedom of operation.</li> <li>Very seldom is there more than one vehicle in queue.</li> </ul>
B	<ul style="list-style-type: none"> <li>Some drivers begin to consider the delay an inconvenience.</li> <li>Occasionally there is more than one vehicle in queue.</li> </ul>
C	<ul style="list-style-type: none"> <li>Many times there is more than one vehicle in queue.</li> <li>Most drivers feel restricted, but not objectionably so.</li> </ul>
D	<ul style="list-style-type: none"> <li>Often there is more than one vehicle in queue.</li> <li>Drivers feel quite restricted.</li> </ul>
E	<ul style="list-style-type: none"> <li>Represents a condition in which the demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement.</li> <li>There is almost always more than one vehicle in queue.</li> <li>Drivers find the delays approaching intolerable levels.</li> </ul>
F	<ul style="list-style-type: none"> <li>Forced flow.</li> <li>Represents an intersection failure condition that is caused by geometric and/or operational constraints external to the intersection.</li> </ul>

## Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle (Seconds)
A	<10.0
B	>10.0 and ≤ 15.0
C	>15.0 and ≤ 25.0
D	>25.0 and ≤ 35.0
E	>35.0 and ≤ 50.0
F	>50.0

It should be noted that the level-of-service criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an unsignalized intersection. Additionally, there are a number of driver behavior considerations that combine to make delays at signalized intersections less galling than at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, while drivers on the minor street approaches to TWSC intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at unsignalized intersections than signalized intersections. For these reasons, it is considered that the control delay threshold for any given level of service is less for an unsignalized intersection than for a signalized intersection. While overall intersection level of service is calculated for AWSC intersections, level of service is only calculated for the minor approaches and the major street left turn movements at TWSC intersections. No delay is assumed to the major street through movements. For TWSC intersections, the overall intersection level of service remains undefined: level of service is only calculated for each minor street lane.

In the performance evaluation of TWSC intersections, it is important to consider other measures of effectiveness (MOEs) in addition to delay, such as v/c ratios for individual movements, average queue lengths, and 95th-percentile queue lengths. By focusing on a single MOE for the worst movement only, such as delay for the minor-street left turn, users may make inappropriate traffic control decisions. The potential for making such inappropriate decisions is likely to be particularly pronounced when the HCM level-of-service thresholds are adopted as legal standards, as is the case in many public agencies.

Appendix 2      Bicycle and  
Pedestrian  
Facilities

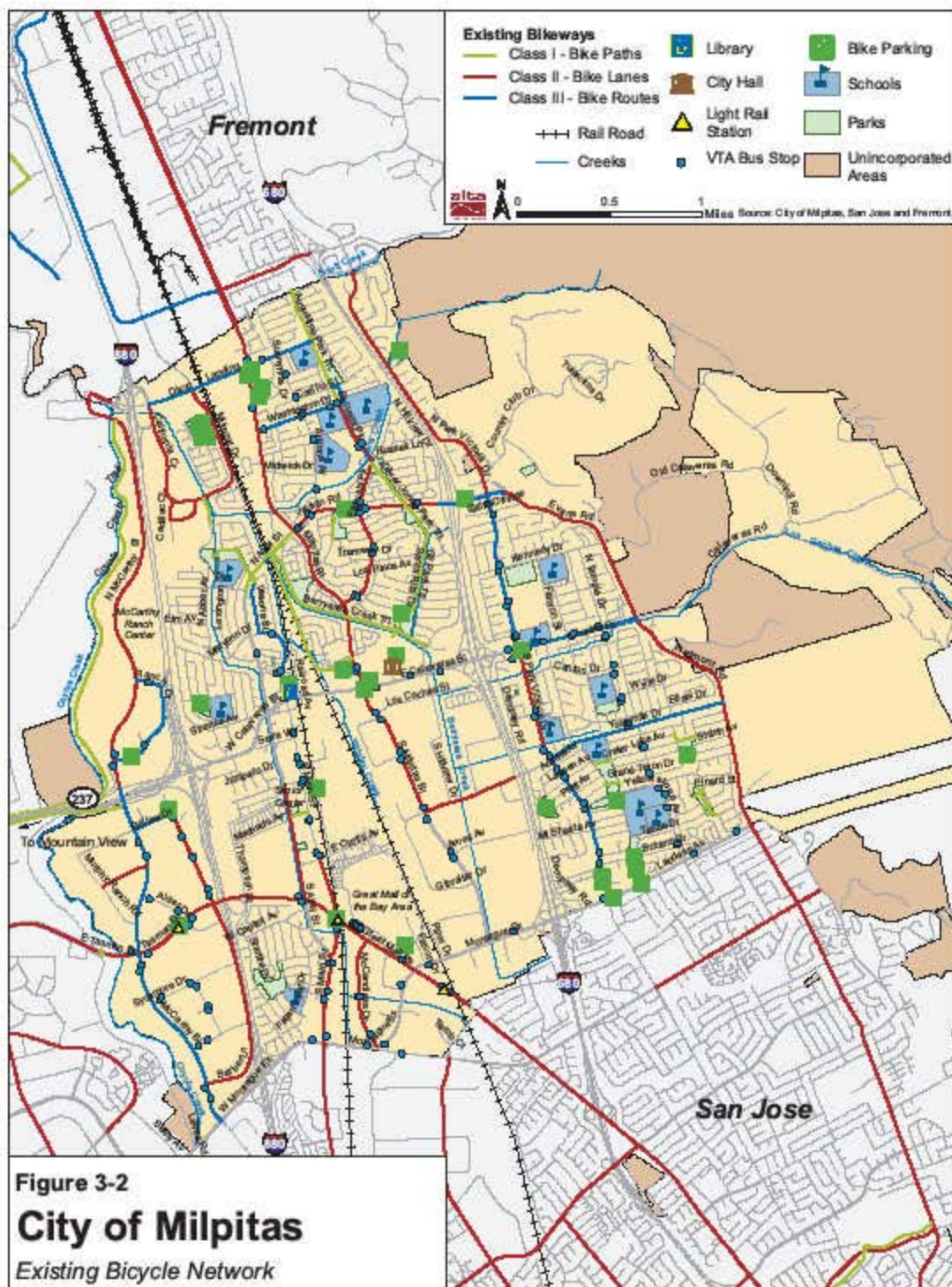


Figure 9: Bicycle Network in Milpitas (10). Double-click to open PDF file.

Appendix 3      Approved  
Developments in  
the Study Area



## ***2011 PLANNING COMMISSION ACCOMPLISHMENTS***

*Approved by the Planning Commission on 12/14/11*

The Planning Commission was busy during the last year considering various development proposals and zoning amendments.

### **Los Coches Residential Project**

Recommended approval of 83 dwelling unit project at the former CalSkate facility site which the City Council approved. The existing buildings have since been demolished and site improvements are on-going.

### **Electronic Freeway Sign near Montague Expressway**

Recommended approval of the replacement of an outdated freeway sign at the gateway to the City, which was approved by the City Council.

### **Tour of Commercial Sites**

In September, the Planning Commission toured the Town Center and McCarthy Ranch Marketplace to get an update of these commercial centers.

### **Citation Residential Project**

Recommended approval of 732 dwelling unit project at Piper Drive within the Transit Area Specific Plan, which the City Council approved.

### **Shea Residential Project**

Recommended approval of 204 dwelling unit project at Main Street within the Midtown Specific Plan, which the City Council approved.

### **Harmony Residential Project**

Recommended approval of 276 dwelling unit project at McCandless Drive and a rezone of property for a future park site, which the City Council approved.

### **Countour Residential Project**

Recommended approval of 134 dwelling unit project at Trade Zone and Montague, which the City Council approved.

### **Streamlining Conditional Use Permit Process**

The Planning Commission and Economic Development Commission established a joint subcommittee to review the Zoning Code and determine opportunities to streamline the process. The subcommittee expects to report their findings and recommendations to their commissions early 2012.



## Appendix 4 Existing Level of Service

Berryessa Creek Traffic Study

Scenario Report  
 Scenario: Existing AM  
 Command: AM  
 Volume: Existing AM  
 Geometry: Existing AM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Existing

Berryessa Creek Traffic Study

Impact Analysis Report  
 Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 I-680 NB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-880 NB	B	12.6	0.680	B	12.6	0.680	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D+	38.1	0.742	D+	38.1	0.742	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpitas	D	40.2	0.792	D	40.2	0.792	+ 0.000 D/V
# 6 Great Mall Pkwy / I-880 NB	C	27.1	0.592	C	27.1	0.592	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D	40.7	0.577	D	40.7	0.577	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	D	49.7	0.427	D	49.7	0.427	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas B	D	39.6	0.182	D	39.6	0.182	+ 0.000 D/V
# 10 Landex Ave / I-680 NB-Dumpsey	D	40.5	0.852	D	40.5	0.852	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da	E	68.1	0.910	E	68.1	0.910	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	94.8	0.553	F	94.8	0.553	+ 0.000 D/V

Figure 11: Existing AM Traffix Sheets. Double-click to open PDF file

Existing PM	Wed May 2, 2012 15:29:12	Page 1-1
Berryessa Creek Traffic Study		
Scenario Report		
Scenario:	Existing PM	
Command:	PM	
Volume:	Existing PM	
Geometry:	Existing PM	
Impact Fee:	Default Impact Fee	
Trip Generation:	No Project	
Trip Distribution:	Project	
Paths:	Default Path	
Routes:	Default Route	
Configuration:	Existing	

Trafix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to KITTELSON, GARLAND

Existing PM	Wed May 2, 2012 15:29:14	Page 2-1			
Berryessa Creek Traffic Study					
Impact Analysis Report					
Level Of Service					
Intersection	Base		Future		Change in
	Del/ LOS	V/ Veh	Del/ LOS	V/ Veh	
# 1 I-680 NB Ramps / Jacklin Road	B	16.2 0.373	B	16.2 0.373	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road	B+	11.5 0.455	B+	11.5 0.455	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-680 NB	B	16.8 0.772	B	16.8 0.772	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	44.1 0.801	D	44.1 0.801	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpitas	D	44.1 0.896	D	44.1 0.896	+ 0.000 D/V
# 6 Great Mall Pkwy / I-680 NB	C+	20.3 0.538	C+	20.3 0.538	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D+	36.7 0.551	D+	36.7 0.551	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	E+	56.6 0.772	E+	56.6 0.772	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas	B D+	35.1 0.549	D+	35.1 0.549	+ 0.000 D/V
# 10 Landexx Ave / I-680 NB-Dumpsey	D	46.2 0.861	D	46.2 0.861	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da	D-	54.8 0.895	D-	54.8 0.895	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	81.4 0.604	F	81.4 0.604	+ 0.000 D/V

Trafix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to KITTELSON, GARLAND

Figure 12: Existing AM Traffix Sheets. Double-click to open PDF file.

Appendix 5 2017  
Base  
Level of  
Service

Sanryassa Creek Traffic Study

Scenario: 2017 Base AM  
 Command: AM  
 Volume: 2017 Base AM  
 Geometry: Existing AM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: 2017

Sanryassa Creek Traffic Study

Impact Analysis Report  
 Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 I-680 NB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-880 NB	B	13.3	0.727	B	13.3	0.727	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	40.0	0.794	D	40.0	0.794	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpita	D	42.5	0.848	D	42.5	0.848	+ 0.000 D/V
# 6 Great Mall Pkwy / I-880 NB	C	29.9	0.675	C	29.9	0.675	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D	40.7	0.656	D	40.7	0.656	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	E	57.6	1.005	E	57.6	1.005	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas B	D	50.7	0.269	D	50.7	0.269	+ 0.000 D/V
# 10 Landex Ave / I-680 NB-Dumpsey	D	44.7	0.912	D	44.7	0.912	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Oa	E	75.7	1.012	E	75.7	1.012	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	96.3	0.630	F	96.3	0.630	+ 0.000 D/V

Figure 13: Base 2017 AM Traffix Sheets. Double-click to open PDF file

2017 Base PM Wed May 2, 2012 15:32:54 Page 1-1

## Berryessa Creek Traffic Study

Scenario: 2017 Base PM

Command: PM

Volume: 2017 Base PM

Geometry: Existing PM

Impact Fee: Default Impact Fee

Trip Generation: No Project

Trip Distribution: Project

Paths: Default Path

Routes: Default Route

Configuration: Existing

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2017 Base PM Wed May 2, 2012 15:32:57 Page 2-1

## Berryessa Creek Traffic Study

Impact Analysis Report  
Level Of Service

Intersection	Base			Future			Change in
	Del/ LOS	Veh C	V/ C	Del/ LOS	Veh C	V/ C	
# 1 I-680 NB Ramps / Jacklin Road	B	16.3	0.400	B	16.3	0.400	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road	B+	11.8	0.487	B+	11.8	0.487	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-680 NB	B-	18.1	0.826	B-	18.1	0.826	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	46.5	0.857	D	46.5	0.857	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpitas	D	48.8	0.960	D	48.8	0.960	+ 0.000 D/V
# 6 Great Mall Pkwy / I-680 NB	C+	21.5	0.616	C+	21.5	0.616	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D+	35.9	0.670	D+	35.9	0.670	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	E	61.0	0.886	E	61.0	0.886	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas B	D	43.2	0.725	D	43.2	0.725	+ 0.000 D/V
# 10 Landessa Ave / I-680 NB-Dumpsey D-	D-	51.1	0.921	D-	51.1	0.921	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da	E	64.8	0.997	E	64.8	0.997	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	91.9	0.649	F	91.9	0.649	+ 0.000 D/V

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Figure 14: Base 2017 PM Traffix Sheets. Double-click to open PDF file.



Appendix 6      Calavaras  
Boulevard  
Partial  
Closure

Sanryassa Creek Traffic Study

Scenario: 2017 Calav cloc AM  
 Scenario Report:  
 Command: AM  
 Volume: Calav cloc AM  
 Geometry: Existing AM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Existing

Sanryassa Creek Traffic Study

Impact Analysis Report  
 Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 I-680 NB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-880 NB	B	12.5	0.604	B	12.5	0.604	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	39.2	0.636	D	39.2	0.636	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpita	D	40.0	0.611	D	40.0	0.611	+ 0.000 D/V
# 6 Great Mall Pkwy / I-880 NB	C-	32.8	0.703	C-	32.8	0.703	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D	40.1	0.682	D	40.1	0.682	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	F	83.8	1.213	F	83.8	1.213	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas B D-		54.6	0.283	D-	54.6	0.283	+ 0.000 D/V
# 10 Landexx Ave / I-680 NB-Dumpsey	D	44.7	0.912	D	44.7	0.912	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Oa	F	97.3	0.904	F	97.3	0.904	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	124.5	0.761	F	124.5	0.761	+ 0.000 D/V

Figure 15: Calavaras Closure AM Traffix Sheets. Double-click to open PDF file



2017 Calav cloc PM Wed May 2, 2012 15:35:03 Page 1-1

## Berryessa Creek Traffic Study

Scenario Report  
 Scenario: 2017 Calav cloc PM  
 Command: PM  
 Volume: Calav cloc PM  
 Geometry: Existing PM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Existing

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2017 Calav cloc PM Wed May 2, 2012 15:35:04 Page 2-1

## Berryessa Creek Traffic Study

Impact Analysis Report  
Level Of Service

Intersection	Base			Future			Change in
	Del/ LOS	V/ Veh	C	Del/ LOS	V/ Veh	C	
# 1 I-680 NB Ramps / Jacklin Road	B	16.3	0.400	B	16.3	0.400	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road	B+	11.8	0.487	B+	11.8	0.487	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-680 NB	B	13.9	0.713	B	13.9	0.713	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	44.8	0.760	D	44.8	0.760	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpitas	D	43.0	0.788	D	43.0	0.788	+ 0.000 D/V
# 6 Great Mall Pkwy / I-680 NB	C-	34.2	0.788	C-	34.2	0.788	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D+	35.8	0.718	D+	35.8	0.718	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	E	63.0	0.928	E	63.0	0.928	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas B	D	50.6	0.849	D	50.6	0.849	+ 0.000 D/V
# 10 Landessa Ave / I-680 NB-Dumpsey	D-	51.1	0.921	D-	51.1	0.921	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da	F	98.7	1.167	F	98.7	1.167	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	114.8	0.777	F	114.8	0.777	+ 0.000 D/V

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Figure 16: Calavaras Closure PM Traffix Sheets. Double-click to open PDF file.



Appendix 7    Montague  
Expressway  
Partial  
Closure

Sanryana Creek Traffic Study

Scenario: 2017 Mont close AM  
 Command: AM  
 Volume: Mont close AM  
 Geometry: Mont Close AM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Existing

Sanryana Creek Traffic Study

Impact Analysis Report  
 Level Of Service

Intersection	Base			Future			Change in
	LOS	Del/ Veh	V/ C	LOS	Del/ Veh	V/ C	
# 1 I-680 NB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road		0.0	0.000		0.0	0.000	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-880 NB	B-	19.9	0.880	B-	19.9	0.880	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	42.0	0.874	D	42.0	0.874	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpita	D	48.0	0.969	D	48.0	0.969	+ 0.000 D/V
# 6 Great Mall Pkwy / I-880 NB	C	31.4	0.675	C	31.4	0.675	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D	39.9	0.691	D	39.9	0.691	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave E-	E-	79.5	1.056	E-	79.5	1.056	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas E+	E+	57.7	0.771	E+	57.7	0.771	+ 0.000 D/V
# 10 Landex Ave / I-680 NB-Dumpsey C-	C-	33.8	0.658	C-	33.8	0.658	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da E-	E-	78.3	1.047	E-	78.3	1.047	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr F	F	146.7	0.700	F	146.7	0.700	+ 0.000 D/V

Figure 17: Montague Closure AM Traffix Sheets. Double-click to open PDF file

2017 Mont close PM Wed May 2, 2012 15:36:45 Page 1-1

## Berryessa Creek Traffic Study

Scenario: 2017 Mont close PM

Command: PM  
 Volume: Mont close PM  
 Geometry: Mont Close PM  
 Impact Fee: Default Impact Fee  
 Trip Generation: No Project  
 Trip Distribution: Project  
 Paths: Default Path  
 Routes: Default Route  
 Configuration: Existing

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2017 Mont close PM Wed May 2, 2012 15:36:48 Page 2-1

## Berryessa Creek Traffic Study

Impact Analysis Report  
Level Of Service

Intersection	Base			Future			Change in
	Del/ LOS	V/ Veh	C	Del/ LOS	V/ Veh	C	
# 1 I-680 NB Ramps / Jacklin Road	B	16.3	0.400	B	16.3	0.400	+ 0.000 D/V
# 2 I-680 SB Ramps / Jacklin Road	B+	11.8	0.487	B+	11.8	0.487	+ 0.000 D/V
# 3 W. Calaveras Blvd / I-680 NB	D+	37.0	1.007	D+	37.0	1.007	+ 0.000 D/V
# 4 W. Calaveras Blvd / Abel St	D	49.7	0.942	D	49.7	0.942	+ 0.000 D/V
# 5 E. Calaveras Blvd / S. Milpitas	E+	59.7	1.060	E+	59.7	1.060	+ 0.000 D/V
# 6 Great Mall Pkwy / I-680 NB	C-	32.5	0.784	C-	32.5	0.784	+ 0.000 D/V
# 7 Great Mall Pkwy / S. Abel St	D+	35.7	0.754	D+	35.7	0.754	+ 0.000 D/V
# 8 Great Mall Pkwy-E. Capitol Ave	E	63.3	0.649	E	63.3	0.649	+ 0.000 D/V
# 9 Montague Expy / S. Milpitas	D-	53.9	0.767	D-	53.9	0.767	+ 0.000 D/V
# 10 Landexx Ave / I-680 NB-Dumpsey	D	47.3	0.835	D	47.3	0.835	+ 0.000 D/V
# 14 Montague Expy / S. Main St-Da	E+	60.0	0.721	E+	60.0	0.721	+ 0.000 D/V
# 15 Montague Expy / McCandless Dr	F	154.3	0.716	F	154.3	0.716	+ 0.000 D/V

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Figure 18: Montague Closure AM Traffix Sheets. Double-click to open PDF file

